LASER MACHINING ROBOT

TECHNICAL FIELD

[0001] The present disclosure relates to a laser machining robot that has a laser machining head and a manipulator.

BACKGROUND ART

[0002] Patent Literature 1 describes a spot welding robot having a spot welding gun at the tip thereof. A first filament body and a second filament body are wired to the spot welding robot. As the first filament body, a power cable, a power supply line, and a signal line connected to a servomotor for driving the joint axis of the spot welding robot are grouped. As the second filament body, a power cable, a power supply line, and a signal line connected to the servomotor for driving the joint axis of the spot welding robot, and a welding power supply line connected to the spot welding gun, a cooling hose, a power supply line, and a signal line are grouped.

[0003] The first filament body and the second filament body are connected from the connection hole in the base of the spot welding robot via the inside of the base, the side of the arm, and the inside of the arm, to the servomotor and the spot welding gun of the spot welding robot.

CITATION LIST

Patent Literature

[0004] PTL1: Japanese Patent Unexamined Publication No. 2012-096332

SUMMARY OF THE INVENTION

[0005] In the conventional spot welding robot, the wiring of a first filament body and the wiring of a second filament body need to be connected to a welding controller for controlling a spot welding gun and a robot controller for controlling the spot welding robot separately. For this purpose, control cables need to be disposed in the welding controller and the robot controller separately from the spot welding robot. These cables can interfere with peripheral devices.

[0006] The present disclosure provides a laser machining robot in which interference of cables used in the laser machining robot with the peripheral devices is reduced.

[0007] In order to address the above problem, the laser machining robot of the present disclosure includes a manipulator, a robot controller, and a laser machining head. The robot controller controls the operation of the manipulator. The laser machining head is mounted to the manipulator and scans a laser beam. The laser machining head includes a servomotor for driving the member for scanning the laser beam. The drive of the servomotor is controlled by the robot controller.

[0008] A laser machining robot of the present disclosure can reduce the number of cables disposed between the manipulator and the robot controller, so that the interference of the cables disposed in the laser machining robot with peripheral devices can be reduced.

BRIEF DESCRIPTION OF DRAWINGS

[0009] FIG. **1** is a right side view of a laser machining robot that includes a manipulator, a robot controller, and a laser machining head in accordance with an exemplary embodiment.

[0010] FIG. **2** is a top view of the laser machining robot that includes the manipulator, the robot controller, and the laser machining head in accordance with the exemplary embodiment.

[0011] FIG. **3** is a left side view of a wrist of the manipulator in a state where the laser machining head is mounted in accordance with the exemplary embodiment.

[0012] FIG. **4** is a perspective view showing a tip of the wrist of the manipulator in a state where the laser machining head is not mounted in accordance with the exemplary embodiment.

[0013] FIG. **5** is a perspective view showing the tip of the wrist of the manipulator in a state where the laser machining head is mounted in accordance with the exemplary embodiment.

DESCRIPTION OF EMBODIMENT

Exemplary Embodiment

[0014] A description is provided for the exemplary embodiment of the present disclosure with reference to FIG. **1** through FIG. **5**. FIG. **1** is a right side view of laser machining robot **100** that includes manipulator **1**, robot controller **51**, and laser machining head **31** in accordance with the exemplary embodiment. FIG. **2** is a top view of laser machining robot **100** that includes manipulator **1**, robot controller **51**, and laser machining head **31** in accordance with the exemplary embodiment. FIG. **3** is a left side view of a wrist of manipulator **1** in a state where laser machining head **31** is mounted in accordance with the exemplary embodiment. FIG. **4** is a perspective view showing the tip of the wrist of manipulator **1** in a state where laser machining head **31** is not mounted in accordance with the exemplary embodiment. FIG. **5** is a perspective view showing the tip of the wrist of manipulator **1** in a state where laser machining head **31** is mounted. Examples of laser machining robot **100** include a laser welding robot and a laser cutting robot.

<Structure and Operation of Laser Machining Robot **100**>

[0015] As shown in FIG. **1** and FIG. **2**, laser machining robot **100** of the exemplary embodiment includes manipulator **1**, robot controller **51**, and laser machining head **31**. A laser beam output from a laser oscillation device (not shown) is input to laser machining head **31**. Laser machining head **31** radiates the laser beam to a workpiece (not shown) while changing the radiation position of the laser beam. Laser machining head **31** is mounted to the tip of manipulator **1**. Robot controller **51** controls the operation of manipulator **1** and the operation of laser machining head **31** based on the operation program stored in robot controller **51**.

[0016] As shown in FIG. **1**, manipulator **1** is of a six-axis vertical multi-articulated type and includes base **12**, rotary part **13**, lower arm **14**, upper arm **15**, and a wrist part. The wrist part includes at least first wrist arm **16**, second wrist arm **17**, and wrist flange **18**. That is, manipulator **1** is roughly classified into seven parts: base **12**, rotary part **13**, lower arm **14**, upper arm **15**, first wrist arm **16**, second wrist arm **17**, and wrist flange **18**. In six connectors for connecting these